15¢
$5.50 A YEAR

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

RECEIVED
AUG 1960
UNIVERSITY
LIBRARY
USAF

MIAMI UNIV LIBRARY
PERIODICAL RECORD
OXFORD OHIO
DEC 60 873-343 2A 3

A SCIENCE SERVICE PUBLICATION

BIOLOGY

Pills Affect Fertility

➤ WOMEN may possibly conceive more easily after they stop using birth control pills than ever before.

Dr. Gregory Pincus, director of research at the Worcester Foundation for Experimental Biology, Shrewsbury, Mass., attending the First International Congress of Endocrinology in Copenhagen, said that a number of women tested with the synthetic steroid pills for control of fertility were more fertile after they stopped taking the pills than they had been before. They became pregnant shortly afterward.

The pills have just been approved by the U. S. Food and Drug Administration for prescription by doctors for contraception. Up to now they have been used to treat certain menstrual difficulties.

Dr. Pincus said he worked for more than six years on fertility control by regulation of ovulation. About 1,500 women from the United States, Puerto Rico and Haiti have been tested. The results show that the method has been 100% successful in preventing pregnancies, Dr. Pincus said.

The synthetic hormone that controls ovulation necessary for pregnancy can be taken as a pill 20 days a month. When a woman stops taking it, she begins to menstruate. After the menstruation period, she again takes the pills for 20 days.

Dr. Pincus said that only two or three of about 200 substances seemed worth trying clinically. The substances have now been tested to make sure they do not cause any abnormalities in the menstrual cycle. By an addition of small amounts of estrogen, the female hormone, the substances not only prevent ovulation, but a more normal menstrual cycle results.

He also said that the hormone tends to shorten the menstrual period, as well as regulate it, and can be used in cases where women have irregular cycles. It is easier to administer than natural hormones that have to be given by injection.

In testing this hormone, Dr. Pincus said, only two side effects have been observed. If the pills were not taken faithfully, the women tended to menstruate sooner.

The other effect was nausea and vomiting, the symptoms of early pregnancy, during the first months the pills were taken. Dr. Pincus said, however, that only about 25% of the women tested were affected this way.

When asked if these control pills held the hope of population control for the future, he said that they would probably be used for some years to come. But new work is being done all the time, he said, and in a few years perhaps another method will take the place of the pills.

He mentioned vaccination as a possible method that might replace the synthetic steroid hormone treatment. He said that such vaccination would probably take place in men and last from one to three months.

• Science News Letter, 78:98 August 13, 1960

GENERAL SCIENCE

Science Planks Important

➤ SCIENCE AND TECHNOLOGY are important planks in both the Democratic and Republican party platforms.

The goals of both political parties in these areas are virtually the same, but the means by which each hopes to achieve them reflect their differences.

The Democrats promise to expand energy sources, "water, tidal and nuclear, to supply low-cost electricity to all retail electric systems, public, private and cooperative." The platform makes it quite clear that these programs not only may be aided by the Federal Government, but even may be developed and managed under public administration.

The Republicans pledge the same expansion but want Government to support industry in development and management. Speaking of the development of natural resources, the Republican platform states, "We endorse the contracting by Government agencies for research and urge allowance for reasonable charges for overhead and management in connection therewith."

Both parties recognize the need for pure water supplies. The Democrats advocate emphasis on Federal action in this area.

"The state and local communities cannot go it alone," state the Democrats.

The Republicans favor "strengthening" Federal enforcement powers in combating water pollution. But Federal grants for construction of waste-disposal plants "should be made only when they make an identifiable contribution to clearing up polluted streams."

Both parties favor community watershed projects. Again, the Republicans pledge regional encouragement without "Federal domination." The Democrats pledge a "comprehensive national water resource policy."

The Democrats promise Government machinery for managing land and mineral resources. "Charges for commercial use of public lands will be brought into line with benefits received," they say. Republicans promise "to study the possibility of restoring lands not needed for a Federal program."

Space and the atom will be explored by the Democrats with emphasis on national control and research. The Republicans favor "a decentralization of research into as many centers of creativity as possible."

In these particular scientific areas, credit for progress or the lack of it may be assumed on a truly bipartisan basis, since the programs initiated by a Republican Administration have been legislated by a Democratic Congress. Whatever each party promises for the future, bipartisanship in Federal action in science has been consistent, except for certain areas in the field of public health and welfare.

This is emphasized by the differences in approach in both parties toward health and medical care for the aged. The Republican party has been committed to a policy which looks upon this problem as mainly local in nature, although it has recognized the need for Federal support. The Democrats favor the use of national machinery.

• Science News Letter, 78:98 August 13, 1960

AERONAUTICS

NASA Sets Target For Future Achievement

➤ PREDICTIONS by the National Aeronautics and Space Administration are that the United States will put a man on the moon about ten years from now, fire an astronaut into orbit next year and launch an orbiting observatory by 1964.

Judging by past performance since January, 1959, the target dates for these goals and others set by the Government's civilian space agency may be achieved.

Early in 1959 NASA officials told a Senate committee that eight satellites and two deep-space probes would be launched in 1959, and six satellites and four deep-space probes in 1960.

In 1959, 12 satellites were successfully launched under NASA's auspices, of which one was a deep-space probe.

Five of the six promised satellites have been fired into space, including Pioneer V, another deep-space probe. What is even more important, four of the 1960 U. S. satellites are still transmitting scientific data.

Also promised for this year are close to a hundred rocket soundings to an altitude of about 4,000 miles, and a sub-orbital launch of an astronaut in the nose-cone of a rocket.

There is some inclination to doubt the astronaut firing because NASA's program in this area called for several successful launchings and recovery of animal-occupied rockets. There have not been enough of these to warrant rocketing a man into an earth orbit, it is believed.

• Science News Letter, 78:98 August 13, 1960

OCEANOGRAPHY

Parachute to Be Used Underwater for Data

➤ THE FAMILIAR PARACHUTE will take to the sea to aid oceanographers in observing ocean currents in a new project of the U. S. Coast and Geodetic Survey. The parachutes will be submerged in several areas about 50 miles offshore. Suspended at depths of approximately 16 and 1,000 feet, the big parachutes will be secured by line to surface floats and allowed to drift with the current. Careful tracking of the floats for a period of 48 hours will provide significant data on direction and speed of deep submarine currents.

• Science News Letter, 78:98 August 13, 1960

MEDICINE

Cancer Proved Contagious

The virus of Rous sarcoma, one form of poultry cancer, has been transmitted to healthy chickens in direct contact with diseased birds for the first time.

➤ CANCER has been proved contagious for the first time.

Rous sarcoma, a virus-caused cancer found in chickens, can be transmitted from bird to bird by direct contact, Dr. B. R. Burmester of the U. S. Department of Agriculture's Regional Poultry Laboratory, East Lansing, Mich., has found.

Until now Rous sarcoma, which has been used in research for 50 years, was thought to be non-contagious. Studies to date suggest that similar virus-caused cancers may also prove contagious.

The new find not only lends weight to the belief of many scientists that viruses cause some forms of animal and human cancers, but also may aid in fighting these diseases.

The experiments that led to proof of the Rous sarcoma virus' contagious nature gave clear-cut results. Dr. Burmester inoculated a number of chickens with the virus, either by under-the-skin injection or intravenous injection, placed these birds in the same pen with healthy chicks and raised them to maturity.

In one test, 35 of 45 healthy birds raised in direct contact with birds inoculated subcutaneously died of Rous sarcoma. Of 59 chickens reared in direct contact with 118 birds inoculated intravenously with a low dose of the virus, six developed tumors and died.

Virus taken from the tumors of contact-infected birds was found to be the same as the virus used for inoculation. The concentration of virus in tumors from contact-infected birds was directly proportional to the amount used to inoculate the chickens to which the contact-infected birds were exposed. Under the microscope tumors from chickens infected artificially or by contact were the same.

In another experiment, healthy chickens were put in the same cubicles with virus-inoculated chickens, but were separated by a wire-mesh screen. None of the healthy birds died with tumors. Direct contact is thus far superior to indirect contact for transmitting the virus.

How the virus is transferred from bird to bird is still unknown, but a few facts have been established. Chickens made to breathe high virus doses in aerosol form did not develop tumors, but more than half developed tumors when the virus was artificially instilled in the nasal passages.

No tumors resulted when virus was placed under the chicken's tongue or when it was applied to a nonfeathered area of intact skin. But 80% developed tumors when the virus was rubbed into a skin scratch or on an area where immature feathers had been extracted. It has also been established that the virus can enter a bird's body through a feather follicle and cause local as well as internal tumors.

Dr. Burmester emphasizes that the chickens used in the experiments belong to a highly inbred line known to be susceptible to the Rous sarcoma virus. He also noted that it took much longer for tumors to develop and for death to occur in the contact-infected birds than in the inoculated birds. First tumor deaths in contact-infected birds occurred 37 days after penmates were inoculated compared with 14 days in the inoculated chicks.

• Science News Letter, 78:99 August 13, 1960

MEDICINE

Unique Israeli Medical Center Is Opened

➤ AN ULTRA-MODERN $25,000,000 medical center, entirely financed and designed in the United States, has been officially opened in suburban Jerusalem.

The facility, the only one of its kind in the Middle East, is the gift of Hadassah, the Women's Zionist Organization of America. It will be known as the Hadassah-Hebrew University Medical Center. The design of the Center is the work of Joseph Neufeld, New York architect.

The opening and dedication of the Center in Israel was observed in Washington by officials of the U. S. Department of Health, Education and Welfare and the Embassy of Israel at a special meeting sponsored by Washington representatives of Hadassah.

The unique 500-bed hospital of the Center may be the forerunner of hospitals of the future both here and abroad. Among its unusual features is the concentration of all nursing and medical care at the center of each semi-circular floor. This gives the medical and nursing staff easy and more complete observation of patients.

Hospital rooms can be converted from single to double to triple accommodations by means of easily maneuverable panels on the outside of the architectural circle. The hospital also will serve as a teaching institution with service laboratories.

The center comprises 17 structures, making it the largest complex of buildings in Israel. Besides the hospital, there is a separate mother and child pavilion for maternity and infant care; an outpatient department that can handle more than 200,000 patient visits annually; the Hebrew-University Hadassah Medical School, Israel's only medical school, founded in 1949 by the Hebrew University and Hadassah; and the Henrietta Szold School of Nursing and Residence.

In keeping with Hadassah policy, medical treatment will be available to Arab, Christian and Jew alike.

• Science News Letter, 78:99 August 13, 1960

PSYCHOLOGY

Vitamin A Maintains The Sense of Taste

➤ VITAMIN A maintains the sense of taste, experiments at the Long Island Jewish Hospital have revealed. The Nutrition Foundation in New York reported that laboratory animals deprived of the vitamin were unable to distinguish between regular tap water and ultra-sour quinine water. Chief sources of vitamin A are milk, egg yolk, yellow fruits and the yellow and dark green vegetables.

• Science News Letter, 78:99 August 13, 1960

ULTRA-MODERN CENTER—This unique medical facility in suburban Jerusalem was designed by Joseph Neufeld, New York architect. Known as the Hadassah-Hebrew University Medical Center, it is the gift of Hadassah, the Women's Zionist Organization of America. Medical treatment will be available to Arab, Christian and Jew alike.

PSYCHIATRY

Whines, Grunts Studied

➤ NOW PSYCHIATRISTS have a way of recording for future study a patient's grunts, bellows, whines, wheezes and even burps.

The sound of a patient's voice often conveys more information to his psychiatrist than does the words he uses. If the patient says "I'm feeling fine, Doctor," but says it in a tearful voice, the psychiatrist will ignore the words and listen to the tone of voice. Dr. Peter F. Ostwald of the University of California School of Medicine in San Francisco describes a method of recording non-verbal noises in the Archives of General Psychiatry, 3:117, 1960.

Probably the most accurate and detailed way of recording these human sounds that are not speech is by speech spectrography, but this method is expensive and requires a highly skilled interpreter, Dr. Ostwald points out. He recommends, as a simpler method, one standardized by acoustical engineers for the measurement and analysis of noise.

A microphone is placed in front of the patient's mouth and his sounds are recorded on tape. Then a small segment of the tape is played backwards into a sound analyzer.

The result of the sound analysis is plotted on graph paper to show the frequency (pitch) of each sound and also the volume. Four different kinds of voices were distinguished by the analysis.

First was a "sharp" voice. This is the kind usually called a nagging, insinuating, querulous tone of voice.

As many people might expect, this kind of voice came mostly from adult women patients. One of the records, however, was made by a 10-year-old boy with a behavior disorder.

A "hollow" voice, the second kind showing up in the records, is often described as a flabby, rattling, quavering voice. Three of these records came from senile men and the fourth came from a young man whose brain was injured in a motorcycle collision.

What Dr. Ostwald calls a "flat" voice is a smudged, lusterless, hesitant way of speaking.

The fourth kind of voice, called the "robust" voice, is the voice known as extrovert, aggressive and confident. The records of robust voice obtained by Dr. Ostwald were obtained from professional men and women, some known for their excellence as teachers or lecturers.

• Science News Letter, 78:100, August 13, 1960

AERONAUTICS

Unmanned Plane Can Spy

➤ AN UNMANNED PLANE and a matching spy system that permits surveys of enemy territory without the risk of losing a single life will relay photographic radar and infrared data to a field commander day or night, under all weather conditions.

The Army said the drone plane would be especially useful for getting target data for tactical missiles.

It needs no landing field for take-off or landing. It is launched from a flat-bed trailer. After flight it parachutes into a selected open area.

It can be pre-programmed for its flight and mission. Constant radio instructions, which might possibly be jammed, are eliminated.

The drone has a slim body 35 feet long. From half way back on its body, delta wings sweep to the plane's rear.

Details of speed, range and altitude were not available. But the turbojet plane is designed to fly fast and low to avoid enemy fire.

Called the AN/USD-5, the spy system includes two huts in which equipment will acquire and process information the drone will instantly radio back. The entire system can be transported by air. The drone itself can be air-lifted by helicopter.

The drone can be instructed to remain in a target area so that the commander can quickly tell if his missile has hit its target.

The spy system is designed for use at field army level.

The plane can automatically follow the contour of terrain so as to avoid detection by flying low—without bumping into hills. The system is being developed with the Army Signal Corps by Fairchild Engine and Airplane Corp. of Hagerstown, Md., under the direction of the U. S. Army Signal Research and Development Laboratory in ~~Fort Monmouth, N. J.~~.

The Army indicated that development of all sensing equipment for the drone is not complete.

• Science News Letter, 78:100, August 13, 1960

METALLURGY

Depleted Uranium May Have Additional Use

➤ DEPLETED URANIUM can be used in the steel industry, in the construction of shielding materials and in various alloys, Vincent Barth and George Rengstorff, metallurgists at the Battelle Memorial Institute, Columbus, Ohio, believe. Stocks of depleted uranium, from which the fissionable isotope U-235 has been extracted, are accumulating at a rate of "tens of millions of pounds a year," they report in the Battelle Technical Review, July, 1960.

The metallurgists said that uranium is still too expensive to compete with metals now used in the steel and allow industries, but that the price might be lowered if increased demand were to lead to better methods of preparation.

• Science News Letter, 78:100, August 13, 1960

VETERINARY MEDICINE

Regulations Will Prevent Poultry Disease Spread

➤ PROPOSED FEDERAL REGULATIONS governing interstate movement of breeding poultry, baby chicks and hatching eggs will offer increased protection against pullorum disease and fowl typhoid, the U. S. Department of Agriculture has reported.

The proposal would require that poultry and hatching eggs shipped interstate must originate from flocks not infected with pullorum or fowl typhoid. These are indicated by an official blood test. In addition, certain sanitary requirements would be established for boxes and crates used in interstate transportation of these products.

• Science News Letter, 78:100, August 13, 1960

SCIENCE NEWS LETTER
VOL. 78 AUGUST 13, 1960 NO. 7

Edited by WATSON DAVIS

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington 6, D. C., NOrth 7-2255. Cable Address: SCIENSERVC.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; ten or more copies in one package to one address, 7½ cents per copy per week; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright © 1960 by Science Service, Inc. Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicated services issued by Science Service. Science Service also publishes CHEMISTRY (eight times a year) and THINGS of Science (monthly).

Printed in U.S.A. Second class postage paid at Washington, D. C. Established in mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index. Member Audit Bureau of Circulation.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: William W. Rubey, U. S. Geological Survey; Wallace R. Brode, Department of State; Douglas Whitaker, Rockefeller Institute for Medical Research. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Philip Bard, Johns Hopkins University; Henry Allen Moe, John Simon Guggenheim Memorial Foundation. Nominated by the National Research Council: Leonard Carmichael, Smithsonian Institution; John R. Dunning, Columbia University; Benjamin H. Willier, Johns Hopkins University. Nominated by the Journalistic Profession: Michael J. Ogden, Providence Journal-Bulletin; O. W. Riegel, Washington and Lee University; Lee Hills, Detroit Free Press. Nominated by the Scripps Estate: Edward J. Meeman, Memphis Press-Scimitar; Frank Ford, Washington, D. C.; Charles E. Scripps, Cincinnati, Ohio.

Officers—President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: Wallace R. Brode; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Gloria Ball, Ann Ewing, W. T. M. Grigg, Faye Marley, Jane Marye, Tove Neville, Marjorie Van de Water. Science Youth Division: Joseph H. Kraus, Shirley Moore, Dorothy Schriver. Photography: Fremont Davis. Production: Priscilla Howe, Marcia Nelson. Syndicate Sales: Hallie Jenkins. Interlingua Division in New York: Alexander Gode, 80 E. 11th St., GRamercy 3-5410. Advertising Manager: Fred A. Moulton, MEtropolitan 8-2562.

MEDICINE

World Polio Conference

Scientists attending the Fifth International Poliomyelitis Conference in Copenhagen discussed the merits of killed versus live polio vaccine, Tove Neville reports from Denmark.

Newborn Babies, Protected From Polio, Can Lose Immunity if They Are Given Vaccine

▶ INFANTS protected against polio at birth from antibodies due to their mothers' immunity may lose their protection when given polio vaccine shots, Dr. Gordon Brown, professor of epidemiology of the University of Michigan School of Public Health at Ann Arbor, told the Fifth International Poliomyelitis Conference at Copenhagen.

He said these studies as well as those of other workers in the field suggest that serious consideration should be given to delaying polio vaccine injection of infants until their passive immunity to the disease has reached a very low level or has disappeared entirely.

It has been known for some time that newborn babies are protected for several months from polio through their mothers' immunity, Dr. Brown said. However, recent studies of two- to four-month-old babies showed that most babies who had detectable antibodies and, therefore, immunity, before the first injection failed to show any added immunity when given a multiple vaccine against polio, diphtheria, tetanus and whooping cough.

In fact, many of the babies showed decreased immunity after three injections, some to such an extent that no antibodies could be found at all.

When infants also showed immunity to diphtheria, tetanus and whooping cough, the same pattern of suppression of existing immunity upon vaccination observed for polio immunity was found for the other diseases.

Dr. Brown said babies who had no immunity before vaccination developed antibodies and immunity from the vaccination, proving that the vaccine was effective for this age group.

Since older children and adults respond well to vaccination although they already have produced antibodies, Dr. Brown said the conclusion can be drawn that the question is not whether antibodies are present or not, but whether they are actively produced in the body or passively acquired as in the baby from the mother.

• Science News Letter, 78:101 August 13, 1960

Live Vaccine Could Attack Unprotected Unless Whole Population Is Vaccinated

▶ THERE IS RISK in using live polio vaccines unless the whole population of an area is vaccinated, Dr. Svend M. Clemmesen, Danish member of the International Poliovirus Congress, said at the Fifth International Poliomyelitis Conference in Copenhagen.

Harmless live virus, in passing from one person to another, might become dangerous, he suggested. Unless all or most of a population were vaccinated against polio, the dangerous forms could attack the unprotected.

The live vaccines were developed by Dr. Albert B. Sabin of the University of Cincinnati, Ohio, and Dr. Herald Rea Cox of the Lederle Laboratories in Pearl River, N. Y. The vaccines are taken orally.

The developer of the older, killed virus vaccine, Dr. Jonas A. Salk, director of the Virus Research Laboratory of the University of Pittsburgh School of Medicine, said, however, that his vaccine is as effective as the live vaccine—it is just a question of making the vaccine strong enough. He also said he believes that immunity can be achieved with one shot of his type vaccine. Three are usually given.

But Prof. M. P. Chumakov, director of the Institute for Poliomyelitis Research of the Academy of Medical Sciences in Moscow, said the live virus must be accepted for mass vaccination in order to eradicate polio as an epidemic disease. He said he considers the Sabin strains of live vaccine completely safe.

Dr. Georg Henneberg, director of the Robert Koch Institute in Berlin, reported that the live vaccine was given in West Berlin because the population there does not like injection-type vaccination and because an epidemic was expected in the area.

The live strain used in Berlin was the Cox vaccine. Dr. Henneberg reported three types of reactions, which he said had been termed interference reactions.

1. On the first day only there were headaches, fever in some cases, diarrhea.

2. Three to five days after vaccination there were pains in limbs, diarrhea and symptoms of tonsillitis, appendicitis and colds.

3. Nine to 13 days after vaccination there were neuroparalytic symptoms such as those occurring in neuroparalytic diseases.

However, part of the batch of vaccine used in Berlin was used elsewhere without resulting in these reactions.

Dr. Henneberg said that about the time of the vaccination, 48 cases of polio occurred in the area. Some occurred among those in contact with the vaccinated.

However, Dr. Sabin reported to the conference that not a single case of polio had occurred in Cincinnati and Rochester, N. Y., where 180,000 and 150,000 children, respectively, had been vaccinated with the Sabin-strain live vaccine.

Dr. Sabin said he could not understand why more time was needed for trials, since it had been shown that the live vaccine creates a resistance to polio.

The use of the live virus is most difficult in subtropical and tropical climates, Dr. A. M.-M. Payne, director of Communicable Diseases at the World Health Organization in Geneva, reported. In Leopoldville in the Congo, vaccination resulted in only 35% immunization, which is hardly satisfactory.

Dr. Payne said that the live vaccine can be concluded to be safe for small children, and that the safety for older children will be confirmed. Certainty of its safety for adults must wait until more data is available, he said.

Since 1957 England has had progressively fewer polio cases, Dr. C. H. Stuart-Harris, professor of medicine at the Royal Hospital in Sheffield, told SCIENCE SERVICE. The vaccine used in England has been the Salk type. He said that Salk-type inactivated vaccine is likely to be used exclusively in England. The vaccine is available under the National Health Service.

• Science News Letter, 78:101 August 13, 1960

Polio Immunity Possible In One Shot, Salk Says

▶ IMMUNITY against poliomyelitis should be possible with just one injection of killed polio virus vaccine, Dr. Jonas E. Salk of the University of Pittsburgh School of Medicine told scientists at the Fifth International Poliomyelitis Conference in Copenhagen.

The number of shots needed for complete immunization depends on the potency of the vaccine. Dr. Salk said past vaccinations show that, in some cases, complete immunization was achieved with only one shot.

General rules for the behavior of killed virus vaccine have been found by analyzing experiences with the vaccine during the last five years.

Dr. Salk said that more shots were needed in cases where the vaccine was not so potent. In the United States immunity has been 90% to 92% effective after two doses and 96% effective after three doses. In other countries, the killed virus vaccine has been 95% to 99% effective after three doses.

There is no known decline in immunity after six years, Dr. Salk said, although such permanence was not expected. Shortly after the vaccine has been given, immunity is very high. Then it levels off, and so far the level of immunity has not declined. The immunity had been expected to drop.

Dr. Salk said that the cost of the killed virus vaccine should not be a limiting factor in using the vaccine.

• Science News Letter, 78:101 August 13, 1960

(Other polio stories on p. 109)

AERONAUTICS

Scientists Calculate How Man May Fly Like Bird

➤ MAN MAY some day be able to fly by flapping a set of artificial wings, two Chilean scientists assert.

Drs. E. Guerra and B. Gunther of the University of Chile, Valparaiso, say it can be done simply by using the mechanical, biological, electrodynamic and aerodynamic similarities of birds and flying insects as a basis for calculation.

A 154-pound man equipped with 66 pounds of flight accessories would need wings about 10 feet long with a flight surface of 60 square feet. To maintain a speed of 45 to 50 miles per hour, he should flap his wings 35 times a minute or a little faster than once every two seconds.

The up-and-down speed of the wing tip should be 15 to 20 miles per hour or about 10 feet per second. The force of a single wing beat would be 45 pounds.

The man would be working about as hard as if he walked up 30 steps a minute. Under the right conditions, a man would be able to keep up this pace for from five to 30 minutes.

Since birds get along so well with a different density from that of man, the man-powered flying apparatus should be constructed to approximate the density of birds, the scientists report in Nature, 187:421, 1960.

Birds sense just how well the flight is going by pressures on the wings as well as the body. The scientists suggest something be done to give a flying man the same advantage.

Drs. Guerra and Gunther conclude that "manpowered flight is possible and should be tested experimentally, because new hypothesis and materials (both metals and plastics) are available which can be used to solve some of the engineering problems involved."

• Science News Letter, 78:102 August 13, 1960

MEDICINE

Lifesaving Differs For Laryngectomees

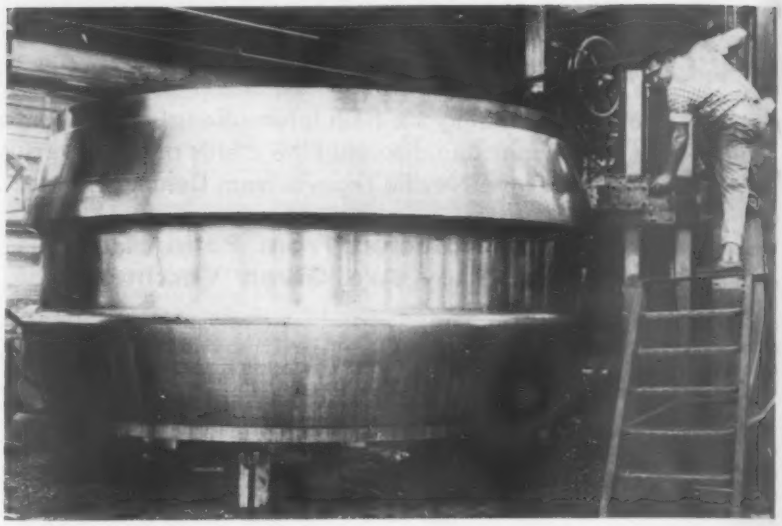
➤ THE INTERNATIONAL ASSOCIATION of Laryngectomees, a group of men and women who have lost their voice boxes to cancer, urged at its St. Louis convention that the public-at-large note "as a matter of life or death" the physical difference between laryngectomees and others:

They breathe through an air hole (stoma) at the base of the neck and not through the nose or mouth. Thus, mouth-to-mouth artificial respiration must not be used. A laryngectomee should be revived by breathing into his stoma.

Most laryngectomees carry with them at all times an emergency card, bracelet or necklace with first aid instructions.

The IAL also has a program to educate community first aid and rescue squads, police and fire departments about their members' special needs. Rehabilitation includes the teaching of speech. Only one-half of the laryngectomees have re-learned speech.

• Science News Letter, 78:102 August 13, 1960



SEAT OF "BIG DISH"—The inner spherical seat for the main pintle bearing assembly on which the Navy's 600-foot radio telescope, "Big Dish," will turn nears completion at Baldwin-Lima-Hamilton Corp.'s Industrial Equipment Division, Eddystone, Pa. Its partial-sphere shape will assure positive seating of the bearing regardless of the position of the telescope, which will rotate through 360 degrees and scan from horizon to zenith.

LINGUISTICS

Meeting Uses Interlingua

➤ ALL PROGRAMS and advance abstracts of symposium lectures, round table discussions and papers at the First International Congress of Endocrinology, held in Copenhagen, were written in the international language, Interlingua. The abstracts totaled about 300,000 words, the equivalent of a good-sized book.

Interlingua utilizes the major European languages in such a manner that a person with only basic knowledge of them can read it without difficulty.

Dr. Alexander Gode, chief of the SCIENCE SERVICE Interlingua Division, New York, translated many of the papers for the Congress into Interlingua. Bjarner Svejgaard, a Danish scientist with the National Geodetic Institute, and Poul Moth, a biological scientist and a language teacher and translator, translated part of the material into Interlingua.

Mr. Moth said that the scientists at the Congress who had some language background found Interlingua easy for anyone to read. He said the scientists were also very interested in Interlingua.

However, Mr. Moth said, the press had written very little about it and paid only slight attention to it.

At the Interlingua booth, among the exhibits, a complete exhibit of textbooks in Interlingua was displayed. Included was a new Scandinavian-Interlingua dictionary by Mr. Moth.

In this dictionary Mr. Moth tried to arrive at a common language for all Scandinavian people, then translated it into Interlingua. The dictionary consists of about 4,000 words.

One Interlingua textbook consists of translations from six languages, English, French, German, Spanish, Italian and Scandinavian, to Interlingua.

There was also a textbook on translating Danish to Interlingua, and a new Concise English-Interlingua Dictionary.

An associate of Mr. Moth at the exhibit, Joergen Kofod-Jensen, a civil engineer who is interested in Interlingua as a hobby, said there are plans under way for using resumes in Interlingua in the English language edition of Ugeskrift for Laeger (Weekly Medical Journal), the main organ for Danish physicians.

This was the eighth international congress in the field of medicine that, since 1954, has used Interlingua to make unnecessary the issuance of summaries in a multiplicity of national languages. Subjects of the other congresses were dermatology, venereal diseases, rheumatic diseases, cardiology, blood transfusion and blood banks, hematology and pediatric research.

Twenty-three medical journals, including the Journal of the American Medical Association, are regularly publishing in Interlingua abstracts of their original papers. Although used principally in medical journals, Interlingua is useful in general and other scientific journals that have international circulation.

• Science News Letter, 78:102 August 13, 1960

EVOLUTION

Antievolution Not Dead

Report by WATSON DAVIS, who covered the 1925 Scopes Trial

➤ ANTIEVOLUTION is far from dead in Tennessee, where in the little town of Dayton 35 years ago the famous Scopes trial was held.

Still on the statute books is a 1925 law that made it unlawful for any teacher in tax-supported schools "to teach any theory that denies the story of the Divine Creation of man as taught in the Bible, and to teach instead that man has descended from a lower order of animals."

It is usual to hear good citizens say that the law is a dead letter and unenforced. It is true that teachers are not being arrested and brought to trial, not even in a test case as John T. Scopes was in the case in which Bryan and Darrow were legal adversaries.

Nevertheless, the prohibition against teaching evolution is effective, far more effective than prohibition of alcoholic beverages stronger than beer. The mere possession of hard liquor is illegal but no one with the price goes thirsty.

No teacher who wants to hold his job teaches evolution. There are too many fundamentalist preachers ready to cause any foolhardy professor to risk trouble in that way. It would be far safer to take an illegal drink. The vocal pro-evolutionist would not be hauled into court but he probably would find his job insecure, his contract unrenewed or the climate uncongenial.

Unlike alcohol, there is no prohibition on students drinking at the fount of scientific wisdom, quaffing great gulps of Darwinism, even during school hours, if the forbidden knowledge sufficiently intrigues them. The good ministers who believe literally in the Genesis account of creation (who believe, as one of them proclaimed, the Bible cover to cover and the covers as well!) may intimidate and close the minds of some students with their constant harangues, but the students are at least free to read what they will.

When in November the motion picture "Inherit the Wind," which recalls the Scopes trial in fictional form, is shown throughout the country, there should be a realization of the intellectual and moral principles involved in the antievolution situation. The conflicts of the "monkey trial" of 1925 are more vivid in the movie than they were in reality almost two generations ago. Emotions are sharpened and the points of view are punched.

As a result of the movie there may be a new crop of Biblical defenders. There may also be a new realization that the freedom of teaching may be worth defending. After 35 years there may be a renewed concern that there shall not be prohibition against teaching of any sort, especially science teaching, no matter how influential, vocal and dominant one opposing group may be.

Freedom of information in our schools ranks with the freedom of press and speech guaranteed in the First Amendment of the U. S. Constitution. Such freedom is abridged by the restrictive Tennessee law.

Just as generations of Americans have struggled to practice or not practice religion as they see fit, so the next few years may bring defense anew of the right of students to learn about all the ideas that are extant. "Inherit the Wind" should speed this process.

• Science News Letter, 78:103 August 13, 1960

MARK IV COCKPIT—This full-sized and semi-operational cockpit, made of aluminum and wood, was designed by Lear, Inc., in conjunction with the Flight Control Laboratory of the Air Force's Wright Air Development Division. The model is the product of a year-long study to determine a systematic method of cockpit design.

PSYCHOLOGY

Laws on Psychology Relatively New in U. S.

➤ THE PSYCHOLOGY PROFESSION, from the point of view of legal status, is relatively new in the United States, Dr. John G. Darley, executive secretary of the American Psychological Association, told colleagues at the Sixteenth International Congress for Psychology in Bonn, Germany.

"The first law affecting psychology," he said, "was passed in Connecticut in 1945."

In the early years of psychology in the U. S. by far the greater number of those called psychologists were employed in universities and colleges. Today, however, about half are found in industry, in Federal, state and local governmental agencies and in school systems, with a small fraction in private practice.

• Science News Letter, 78:103 August 13, 1960

TECHNOLOGY

Method of Designing Space Vehicle Cockpits

➤ A SCIENTIFIC METHOD of designing cockpits for space vehicles and traditional aircraft that will increase pilot efficiency and human safety has been developed jointly by Lear, Inc., and the Wright Air Development Division of the U. S. Air Force.

Air Force engineers, headed by Edward L. Warren, and Lear engineers and psychologists said that the method for efficient cockpit design was also applicable to virtually any activity where successful operation depends on numerous, varied and complicated instrumentation supplying data to an operator who must use the information to control an activity.

Overall, the state of cockpit design in conventional aircraft has lagged far behind that of aerodynamics, propulsion and structural design. Many safety engineers today believe that a number of accidents commonly credited to pilot error actually were caused by the inability of the cockpit to support pilots with essential and interpretable data in a critical and stressful period of flight. The instrumentation problems experienced in conventional aircraft are multiplied many times in space flight.

• Science News Letter, 78:103 August 13, 1960

MEDICINE

Paralyzed Moroccans Still Getting Treatment

➤ SOME 80% of the 10,000 Moroccans paralyzed last November by eating adulterated cooking oil are still stricken. Only about 20% are cured, but 30% are making marked progress.

To aid treatment of the 8,500 in the rehabilitation centers established by the League of Red Cross Societies in Morocco, five doctors from the University of Pennsylvania in Philadelphia have volunteered to spend a month each as medical adviser there.

The 10,000 Moroccans were stricken after eating food prepared with cooking oil mixed with an oil used to flush the engines of jet planes. Most of the victims are under 18 years of age.

Twenty-seven Moroccan merchants were found guilty of preparing the poisonous concoction to increase profits. Five were given death sentences and the others were imprisoned for life.

The five Philadelphia doctors will not be paid for their services, but the American Red Cross will provide travel expenses, and the Medical International Cooperation Organization (MEDICO), a nonprofit organization, will pay living expenses.

At present a medical staff of 50 from Red Cross societies in 13 nations is caring for the paralyzed victims. The American Red Cross has provided two nurses and six physical therapists since the outbreak to help with the treatment.

• Science News Letter, 78:104 August 13, 1960

CHEMISTRY

Soil Treatment May Reduce Strontium-90

➤ THE RATE of uptake by soils of radioactive strontium-90 varies according to their composition and may be reduced by chemical treatment, new studies have shown.

Strontium-90 is a long-lived element of fallout from nuclear testing and in large doses is known to be a cause of leukemia and bone cancer in man. It acts like calcium; and well-developed calcium formations in both plants and animals tend to form a natural barrier to strontium-90.

This was found to be true of high calcium soils as well, according to experiments by R. L. Uhler and F. P. Hungate of the Hanford Laboratories of General Electric Company, Richland, Wash., reported in Nature, 187:252, 1960.

Strontium-90 studies were made on crops grown on uncultivated but watered acidic, calcareous and alkaline soils.

The uptake from the calcareous soil was one-half to one-third the uptake from acidic soil. The investigators attributed this to the larger quanities of available calcium naturally present in calcareous soil.

The GE scientists found that it was possible to reduce uptake of radioactive strontium-90 by as much as 80% by adding calcium-high lime or gypsum to acidic soils.

Basic calcareous and alkaline soils treated with massive doses of phosphate showed a 50% reduction in uptake of strontium-90. Except for the phosphate treatment, however, none of the other procedures appreciably lowered strontium-90 uptake from calcareous soil.

The lack of cultivation while thoroughly wetting the soil and allowing it to dry established to some extent the potential reduction of radioactive contamination through precipitation reactions. Further studies are needed to determine whether an appreciable part of this potential can be realized.

The availability of strontium-90 from soil to plants to man is an important factor in evaluating the health hazard presented by this radioactive element.

• Science News Letter, 78:104 August 13, 1960

PSYCHOLOGY

Mental Discipline Seen Cure for Man's Troubles

➤ IN HIS EXHAUSTIVE struggle to adapt to today's society of rigid orderliness and conformity, man persists in using the escape hatches of barbiturates and tranquilizers rather than trying "the permanent cure—mental discipline through education," said Dr. G. Arnold Cronk, associate professor of health and preventive medicine at Syracuse University, at a symposium on Creative Arts Education.

"This dysadaptation of man to his environment has resulted in psychic, psychosomatic and somatic disorders resulting in ulcers, hypertension and possibly arteriosclerosis," Dr. Cronk said at the Syracuse, N. Y., meeting.

Setting materialism, status and technology as supreme goals was lamented by Dr. Cronk.

He said, "It is unfortunate that today's men and women are born at a time when education is devoted to what sells best as determined by Madison Avenue techniques.

"The time has come when it is imperative that we carefully examine the genetic and biological abilities of man in relationship to the demands of cultural and educational systems. Our failure to assume this responsibility would, I am afraid, put the seal of doom on the continued evolution of man and his culture," Dr. Cronk continued.

In regard to creativity, Dr. Cronk said that if it "is defined to mean adventure into the unknown, there has developed a tremendous stagnation of creativity. We are rapidly running out of the ideas upon which tomorrow's culture will depend."

• Science News Letter, 78:104 August 13, 1960

ENTOMOLOGY

Insecticidal Spray Controls Moths in Pianos

➤ AN EFFECTIVE INSECTICIDAL spray solution for the control and prevention of carpet beetles and clothes moths that feed on the wool felt parts in pianos has been developed by the U. S. Department of Agriculture in cooperation with the Piano Technicians Guild. The new solution is inexpensive to produce commercially and easy for technicians to apply. It is colorless, evaporates rapidly and leaves no odor.

• Science News Letter, 78:104 August 13, 1960

IN SCIEN

PHYSICS

Alternating Gradient Synchrotron Operating

➤ THE ALTERNATING GRADIENT synchrotron at Brookhaven National Laboratory, Upton, N. Y., one of the world's two largest operating particle accelerators, has produced for the first time a beam of protons at an energy of more than 30 billion electron volts, or Bev.

This is the highest energy ever attained by a particle accelerator. Before reaching this energy, the AGS had run for about an hour at 24 Bev.

In 1952 the principle of strong focusing of the particle beams was discovered by Brookhaven scientists. If this discovery had not been made, the magnet for an accelerator capable of reaching the desired energy would have been prohibitively large and expensive.

The completion of the AGS at its designed energy will enable scientists in the United States to study nuclear interactions at energies about five times greater than previously possible.

Another accelerator, quite similar in design and size to the AGS, has been completed at the European Organization for Nuclear Research (CERN) Laboratory, near Geneva, Switzerland. The CERN proton synchrotron, has been run at 28 Bev. (See SNL, 77:394.)

With a machine in the 30-Bev range, physicists at Brookhaven expect to learn more about the many kinds of particles, such as mesons and hyperons, and the various "anti-particles," that are produced in target nuclei by bombarding them with high-energy protons.

• Science News Letter, 78:104 August 13, 1960

DENTISTRY

X-Rays O.K. for Teeth, Says Dental Association

➤ THE AMOUNT of radiation needed to make a complete survey of the mouth by X-ray is below the detectable damage level.

The Journal of the American Dental Association, 61:275, 1960, says, "The routine use of modern X-ray equipment and techniques for dental diagnostic purposes is not harmful."

The Council on Dental Research of the ADA says the fraction of diagnostic radiation that reaches the reproductive organs of the body during the course of a dental examination is less than the amount received by each person from natural sources in an entire year, and can have no significant influence on the genetic patterns of succeeding generations.

Patients should have X-ray examinations when the dentist indicates they are necessary, the Council says.

• Science News Letter, 78:104 August 13, 1960

E FIELDS

AERONAUTICS

Atomic-Powered Aircraft Designs Revealed

See Front Cover

➤ NUCLEAR-POWERED PLANES that could fly non-refueled to the limit of the crew's endurance have been designed. Some of the details were revealed by the U. S. Air Force and Convair Division of General Dynamics Corporation.

Drawings showed two swept-wing planes, each having an assembly of jet-like engines mounted in the tail of the fuselage. This style is one of several possible configurations under study.

The canard-type planes lack conventional tails. At each wing tip is a vertical stabilizer-rudder assembly. The horizontal stabilizer-elevator surfaces are placed far forward on the fuselage, like stubby wings.

One design, shown on the cover of this week's SCIENCE NEWS LETTER, is for the direct-air-cycle nuclear engines, a type under development by the General Electric Co. The drawing for this aircraft shows a pair of conventional jet engines mounted under the wings, in addition to the nuclear powerplant.

The other design employs indirect-cycle engines, a type under development by Pratt & Whitney Aircraft. Which kind of nuclear powerplant will be used in the first plane has not yet been determined.

• Science News Letter, 78:105 August 13, 1960

ANIMAL HUSBANDRY

Humane Slaughter Law Effective August 30

➤ A FEDERAL HUMANE SLAUGHTER law becomes effective Aug. 30. It requires packers selling meat to the Government to use an approved humane method of immobilizing the animals before they are killed.

There are three approved methods of immobilization. In one, animals are knocked out by carbon dioxide.

In the other two methods, electrical shock or mechanical concussion is used to stun the animals. They are held in a restraining pen while an electric probe or mechanical instrument is applied to their heads.

Cardox Division of Chemetron Corporation, a supplier of carbon dioxide, claims the carbon dioxide system keeps hogs unconscious for about four minutes, twice the time needed for slaughtering. The heavier-than-air gas gathers at the bottom of a tunnel which is depressed in the center. Animals walk into the tunnel and emerge, unconscious, on a conveyor belt.

Cardox reports that in one test, a hog that had passed through the system, but purposely had not been killed, did not resist repeating the trip soon after regaining consciousness.

The new law requires that animals be rendered unconscious painlessly before being killed. It also regulates animal handling, the construction of restraining pens and the training of personnel.

Requirements of the law, and the techniques which have been developed for immobilization, can be used to improve the initial stages of animal dressing and, in some cases, to increase productivity, according to packers who have installed humane slaughter machinery.

"But infinitely more important is the fact that these animals will be spared many of the horrors of the packinghouse," said Mrs. Christine Stevens, president of the Animal Welfare Institute.

Five states, California, New Hampshire, Washington, Wisconsin and Minnesota, will have humane slaughter laws that become effective Aug. 30, the same date as the Federal law. Massachusetts recently passed a law that will become effective Jan. 1, 1962. Generally they supplement the Federal law and provide specific penalties for failure to comply.

• Science News Letter, 78:105 August 13, 1960

BIOCHEMISTRY

Some Fish Poisons More Toxic Than Nerve Gases

➤ POISONS isolated from clams and from the puffer fish have been found to be several times more toxic than the most powerful nerve gases known.

Small amounts of these animal poisons can temporarily block nervous transmission and conduction, but how they do it is still a puzzle.

A research team at Columbia University found that the equivalent of one drop in a rain barrel (a concentration of .0001 microgram per milliliter) of either poison would block electrical activity in the frog sciatic nerve fiber within 30 seconds.

Different concentrations of each poison were required to effect blockage under certain conditions in experiments with electric eels. But each poison was capable of shutting off both direct and indirect stimulation.

The presence of curare, a drug that paralyzes muscles by jamming the transfer of an impulse from nerve to muscle, had no effect on the amount of clam or puffer-fish poison required to block response to direct stimulation.

Several possible explanations have been proposed for the action of these poisons, but all to date have either been ruled out by preliminary tests or have not been tested sufficiently.

"At present, no satisfactory explanation can be given of the underlying chemical reaction," the researchers report in Science, 132:300, 1960, but the poisons promise to provide biologists with "a new potent tool for the analysis of events associated with nerve activity."

The research is reported by Drs. W. D. Dettbarn, H. Higman, P. Rosenberg and D. Nachmansohn, all from the departments of neurology and biochemistry, College of Physicians and Surgeons, Columbia University, New York.

• Science News Letter, 78:105 August 13, 1960

GEOPHYSICS

Mantle of Earth Like Steel or Plastic

➤ GEOPHYSICAL STUDIES indicate that the mantle of the earth is as rigid as steel during short periods of time, but is more like a plastic material over a multi-million year span.

Earthquake waves, which may last a few minutes, have shown that the earth, like a steel ball, can be deformed by strong forces, but springs back to its original shape after the forces are removed.

On the other hand, geological processes indicate that over millions of years the earth can be permanently deformed, like plastic, as when mountains rise where seas once existed.

In a long-range study of earth tides at the University of California's Institute of Geophysics in Los Angeles, the gap between the minutes of seismic wave measurements and the eons of geological time has been slightly narrowed.

The earth tides, similar to ocean tides, cause two daily bulgings of the earth's crust. As the earth rotates, the bulges rise and fall under our feet, following the gravitational pull of the moon and the sun.

For more than a year, a team of UCLA geophysicists under Dr. John C. Harrison measured the rise and fall of the earth tides at 13 stations all over the globe. The measurements proved that the earth behaves like a solid, not just for a few minutes but for at least 24-hour periods or longer.

There is still a tremendous time span between a day and the million-year flow on continents, but in the future UCLA geophysicists hope to narrow the gap further by measuring fortnightly, monthly and ultimately annual earth tides.

• Science News Letter, 78:105 August 13, 1960

DENTISTRY

Toothpaste Gets ADA's First Approval

➤ THE AMERICAN DENTAL Association has for the first time approved a fluoride dentifrice. The ADA, at the same time, has recommended fluoridation of the community water supplies as the most desirable method of preventing tooth decay.

Dr. Lester W. Burket of Philadelphia, chairman of the ADA Council on Dental Therapeutics, who reports the approval of Crest in the Journal of the American Dental Association, 61:272, 1960, says, "The stannous fluoride dentifrice is an aid in combating dental decay; it is not a cure-all. Nor will it substitute for fluoridation of community water supplies. Fluoridation, which is supported by exhaustive long-term studies, remains by far the most effective means for obtaining the benefits of fluorides."

The manufacturer's willingness to limit advertising claims to those supported by adequate research was one of the determining factors in the ADA decision to approve the dentifrice.

• Science News Letter, 78:105 August 13, 1960

GENERAL SCIENCE

Scientists Enter Politics

Scientist-legislators in Congress lag behind Soviet scientist-legislators in numbers, but they are taking a leading role in national and international affairs.

By LILLIAN LEVY

➤ SCIENCE plays a major role in domestic and international politics today, but few representatives in Congress are scientists. More than 25% of the deputies of the Supreme Council of the Soviets are scientists, while only 15 members, or less than three percent, of the U. S. House of Representatives and the Senate have had any extensive scientific training or background.

Two are Senators: pharmacist Hubert H. Humphrey (D.-Minn.) and Dr. Ernest Gruening (D.-Alaska), a physician. The House has four doctors, three chemists, two pharmacists, two members with degrees in forestry, one agronomist and one psychologist. Representation on both sides of the political aisle is almost equal.

One-third of the scientist-legislators are active in foreign affairs and involved in problems ranging from world health to nuclear disarmament and the international aspects of space exploration. These include Sen. Humphrey; Rep. Walter H. Judd (R.-Minn.), a surgeon; Rep. Marguerite Stitt Church (R.-Ill.), a former consulting psychologist; Rep. William H. Meyer (D.-Vt.), a forester; and Rep. Thomas E. Morgan (D.-Pa.), a surgeon and currently chairman of the House Committee on Foreign Affairs.

Various factors led these scientists into politics, and many have found they favor the role of politician over that of scientist.

Dr. Morgan, for example, found that he preferred dealing with the body politic than with the human body. He has adopted politics as a full-time career.

Unlike Dr. Morgan, Dr. Judd prefers dealing with the illnesses of the human body, mind and spirit, because "they are easier to diagnose than the illnesses that plague the body politic."

Dr. Judd said he felt duty-bound to enter politics. As both a doctor and a missionary for more than a decade in the Far East, Dr. Judd has a wide knowledge and understanding of the problems in that area. Before Pearl Harbor, he warned against selling scrap and other materials for munitions to Japan. After Pearl Harbor his neighbors remembered his warnings and proposed him for Congress.

On international affairs, his main concern is the threat and spread of the danger of nuclear war. Locally, he believes the health of the American Indian has been "shamefully neglected" and hopes to introduce legislation to correct this.

Trained in Chemistry

Also concerned with the threat of nuclear war is Rep. Frank Kowalski (D.-Conn.), a West Point graduate and holder of an M.S. in chemistry from the Massachusetts Institute of Technology. Trained in the art of warfare, he is the author of inventions with military application.

Yet Rep. Kowalski has said: "If I have any objective, it is to see what we can do to achieve world peace."

He has seen first-hand the havoc wreaked by conventional arms in the bombing of Berlin and the awesome destruction of Hiroshima with the atom bomb. Others may question our military capability, but Rep. Kowalski seriously questions the human capability for peace.

He has said, "I don't know if humanity is stable enough, intelligent enough or honest enough to accept peace; but if we don't want the horror of Hiroshima repeated many times over, we'd better develop a capability for peace."

Like Dr. Judd, Rep. Kowalski also has had extensive experience in the Far East, where he was a military governor in Japan for close to five years, after Hiroshima. He now lends his experience to the House Armed Services Committee.

Rep. Meyer led a House fight to pass legislation which would prevent transfer of atomic weapons to other countries. Active in research in forestry and land use until his election to Congress last term, Rep. Meyer favors caution in developing nuclear power that may contaminate our lands and forests. He is an advocate of more biological investigation in pesticides and fertilizers as well as in atomic fallout.

Pharmacist Is Active

Rep. Larry Brock (D.-Nebr.), pharmacist, is active in the area of interstate and foreign commerce dealing with licensing and sale of drugs.

Rep. Gordon L. McDonough (R.-Calif.), industrial chemist in the field of munitions and explosives, is active on the House Committee on Science and Astronautics.

Although maintaining his interest in science, Rep. McDonough has put aside his professional career as a chemist for politics. So have nine other members of the scientific minority in Congress. Those who have found political science the most satisfying of the sciences include the two Senators, Humphrey and Gruening; Rep. Church, Rep. Morgan, Rep. Leroy H. Anderson (D.-Mont.), a chemical engineer; Rep. Clifford Guy McIntire (R.-Me.), agronomist; Dr. Ivor D. Fenton (R.-Pa.), a physician; pharmacist Rep. Carl Thomas Durham (D.-N.C.), who is vice chairman of the Joint Committee on Atomic Energy; and former forester Rep. Walter Mann Mumma (R.-Pa.), who said that he found his way "out of the woods a long time ago" and dis-

Left to right: Rep. Clifford Guy McIntire (R.-Me.), agronomist; Rep. William H. Meyer (D.-Vt.), forester; Rep. Carl Thomas Durham (D.-N.C.), pharmacist; Rep. T. Dale Alford (D.-Ark.), ophthalmologist; Rep. Gordon L. McDonough (R.-Calif.), industrial chemist; Rep. Larry Brock (D.-Nebr.), pharmacist; Rep. Leroy H. Anderson (D.-Mont.), chemical engineer.

Left to right: Rep. Thomas E. Morgan (D.-Pa.), surgeon; Rep. Ivor D. Fenton (R.-Pa.), physician; Rep. Frank Kowalski (D.-Conn.), chemist; Sen. Ernest Gruening (D.-Alaska), physician; Rep. Walter H. Judd (R.-Minn.), surgeon; Sen. Hubert H. Humphrey (D.-Minn.), pharmacist; Rep. Walter Mann Mumma (R.-Pa.), forester.

covered that he "prefers political timber to any other kind."

Rep. T. Dale Alford (D.-Ark.), an ophthalmologist and a freshman in Congress, still maintains his practice. Like his colleagues, he may frown on politics in science, but favors science in politics.

These scientist-legislators believe, as Rep. Meyer has said, that "in these times, when science plays so dominant a role in world and national affairs, more scientists should enter into politics."

The legal profession presently dominates the United States legislative branch, numbering 60% of the members of both houses. Businessmen and farmers elected to Congress number about 18%. Newspapermen and teachers are less than 10%. The remainder, including nine of the 11 women in Congress, come from a variety of professions and occupations ranging from ministers to morticians. Two of the women are lawyers.

The U. S. legislative make-up contrasts sharply with that of the USSR. The majority of the 1,378 members of both Soviet legislative houses are workers and peasants, with 831 (60%) included in these two categories.

According to Igor Bubnov, information officer of the Soviet Embassy in Washington, almost half of these deputies are actively engaged in agricultural production and industry.

But more than 25% of the Supreme Council are "working scientists," the Soviet spokesman said. This category would include engineers, agronomists, doctors, public health specialists, chemists, physicists, dentists, botanists, biologists and representatives of many other science fields.

Lawyers are virtually unrepresented in the Supreme Council. Rep. McIntire, Congress' sole agronomist, a member of the House Agricultural Committee and a farmer, said, "It is not surprising that lawyers are so little represented in the Soviet Council. In the totalitarian communist state, men—not laws—are supreme. The United States is a nation of laws, not men. Lawyers naturally would tend to dominate and lead in the government of a country such as ours."

While appreciating the function and need for lawyers in government, Rep. McIntire pointed out that legal training by itself is not necessarily a qualification for a successful political career. Scientific training may be an even better prepartion for Congress, he said, judging by the activity and political leadership offered by the scientific minority in Congress. In serving on their Congressional committees, they have taken a lead in domestic and foreign affairs involving nuclear disarmament, test suspension, world health and the national and international aspects of space exploration.

• Science News Letter, 78:106 August 13, 1960

MEDICINE

Overseas Medical Aid Improves U. S. Health

➤ THE FEDERAL GOVERNMENT spends more than three billion dollars annually for health and health-related activities.

Of this amount, more than $150,000,000 is for health activities abroad.

The pay-off in scientific knowledge from this large investment was stressed by physicians and health authorities in testimony before the Subcommittee on Reorganization and International Organizations of the Senate Committee on Government Operations. The Subcommittee chairman is Sen. Hubert H. Humphrey (D.-Minn.).

U. S. support for international cooperative research in cardiovascular diseases alone has provided significant advances in understanding the causes of heart disease, Dr. Paul Dudley White, president of the International Society of Cardiology Foundation, told the Committee.

The United States and Finland have the highest frequency of coronary heart disease in the world. In 1958, heart diseases accounted for more than 30% of all deaths in the United States, including accidents.

Dr. White said international cooperation to determine the various factors in living habits and customs that are related to the frequency of coronary failure in a particular human community is necessary "for the sake of our own health, not just to aid other countries."

Dr. Albert B. Sabin of the University of Cincinnati, who developed a live, oral polio virus vaccine, said that field trials with the vaccine on a large scale were not possible in the U. S. because of the earlier extensive use of the Salk vaccine. The large-scale foreign trials were made possible only by cooperation and work with the World Health Organization.

Dr. Edward L. Bortz, president of the medical staff of Lankenau Hospital in Philadelphia, and an authority on geriatrics, said the United States has valuable information that can contribute to the health and welfare of older individuals, and that international medical cooperation would help spread this beneficial knowledge.

He urged a long-range international research program to "accelerate the discovery of new facts leading to a more efficient control of the diseases and deteriorations that affect aging individuals."

Dr. Jonas Salk, whose vaccine was one of the great breakthroughs in conquering polio, wrote the Subcommittee that "our attitude about the problem of international health, and, more importantly, what we do about it, could influence greatly some of the most urgent world problems."

The Subcommittee under Sen. Humphrey currently is inviting public appraisal of the work it has done and is trying to plan guidance for future U. S. policy in international medical cooperation.

• Science News Letter, 78:107 August 13, 1960

ENGINEERING

U. S. Engineering Schools Spent $71 Million on R&D

➤ UNITED STATES ENGINEERING schools spent $71,000,000 for sponsored research and development in fiscal year 1958, the National Science Foundation reported.

Of this, $48,600,000 was given the schools by the Federal Government. Industry supplied $10,300,000. The schools themselves spent $10,500,000 of their own funds for research and development. An additional $3,500,000 of their own funds were used to cover the indirect, extra costs of grants and contracts mainly supported by outside sources.

The survey covered 129 engineering schools. Of the total spent, 57% went for basic research. In the last study in 1954, only 45% was spent on basic research.

• Science News Letter, 78:107 August 13, 1960

• Books of the Week •

For the editorial information of our readers, books received for review are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C.

ADVANCES IN SPACE SCIENCE, Vol. 2—Frederick I. Ordway, III, Ed.—*Academic*, 450 p., illus., $13. Covers the areas of experimental physics, using space vehicles, tracking of artificial satellites and lunar probes, materials in space, plasma propulsion devices and electrostatic propulsion systems.

AIR POLLUTION MANUAL, Part I: Evaluation—George D. Clayton, Chmn.—*Am. Industrial Hygiene Assn.*, 194 p., illus., $8.50. Represents more than four years of work by a group of scientists competent in interpreting the effects of air pollution on health, vegetation and farm animals, methods of stack sampling, chemical procedures, odors, radioactivity and meteorological factors.

ANIMAL SPECIES AND THEIR EVOLUTION—A. J. Cain—*Harper*, 190 p., illus., paper, $1.35. First published in 1954, book is intended to be a survey of the nature of species, their origin and their evolutionary importance.

AVIATION IN THE MODERN WORLD: The Dramatic Impact upon Our Lives of Aircraft, Missiles and Space Vehicles—James V. Bernardo—*Dutton*, 352 p., illus., $5.95. Explores the role of aviation in commerce, agriculture, meteorology and public welfare; reviews the U. S. airport system, national defense and space exploration; ends with short historical survey.

A COURSE IN RADIO FUNDAMENTALS: Study Assignments, Experiments and Examination Questions—George Grammer—*Am. Radio Relay League*, 4th ed., 103 p., illus., paper, $1. For radio amateurs; outlines experiments and describes the construction of experimental gear.

DOCUMENTATION, INDEXING, AND RETRIEVAL OF SCIENTIFIC INFORMATION: A Study of Federal and Non-Federal Science Information Processing and Retrieval Programs—U. S. Senate Committee on Government Operations—*Govt. Printing Office*, 283 p., paper, 70¢.

EINSTEIN: A Pictorial Biography—William Cahn—*Citadel Press*, 127 p., illus., paper, $1.25. First paperback reprint of 1955 edition of copiously illustrated short biography highlighting the great physicist's life.

EXPERIMENTS IN GENERAL CHEMISTRY—Russell S. Drago and Theodore L. Brown—*Allyn & Bacon*, 236 p., illus., paper, $3.95. Laboratory manual with experiments designed to encourage the student to do some preparing prior to the laboratory period, with questions requiring the student to *think* about what he has done in performing the work.

FIRE IN THE VALLEY—Jack Hambleton—*Longmans*, 156 p., photographs, $3.75. Tells authentic story of how a forest fire begins, how it travels, the damage it causes, based on fire in Ontario, Canada, which covered nearly 12,000 acres in a single afternoon.

FISHES OF THE DEVONIAN HOLLAND QUARRY SHALE OF OHIO—Robert H. Denison—*Chicago Nat. Hist. Mus.*, 58 p., illus., paper, $1.50. Describes collection of fossil vertebrates from a Devonian formation in northwestern Ohio.

FISHES OF THE MARSHALL AND MARIANAS ISLANDS, Vol. 2: Families from Mullidae through Stromateidae—Leonard P. Schultz and others—*Smithsonian Inst. (GPO)*, U. S. National Museum Bull. 202, 438 p., illus., paper, $2.25.

GEOLOGIC EVOLUTION OF EUROPE—Roland Brinkmann, transl. from German by John E. Sanders—*Hafner Pub. Co.*, 161 p., illus., 18 correlation charts, $8.50. Condensed version of second volume of 8th edition of "Abriss der Geologie," to give the English-speaking geologist an introduction to the geology of Europe.

A GUIDE TO THE STARS—Patrick Moore—*Norton*, 222 p., photographs, $4.95. Written for the layman, the book is a readable account of the fundamentals of stellar astronomy; it tells about double stars, variable and temporary stars, clusters, nebulae, galaxies and radio waves from space.

HISTOLOGICAL TECHNIQUES FOR ELECTRON MICROSCOPY—Daniel C. Pease—*Academic*, 274 p., illus., $7.50. Intended as a practical guidebook for those who would study cells or tissues with the electron microscope, discusses organization of laboratory, tissue exposure, fixation, embedding, sectioning, section mounting, microscopy photography and alternate methods of specimen preparation.

A LIST OF COMMON AND SCIENTIFIC NAMES OF FISHES FROM THE UNITED STATES AND CANADA—Reeve M. Bailey, Chmn.—*Am. Fisheries Society*, 2nd ed., 102 p., $2; paper $1. Revised and enlarged list of accepted common names, occurrence and scientific names, fully indexed.

MAN'S CONTRACTING WORLD IN AN EXPANDING UNIVERSE—Ben H. Bagdikian, Ed.—*Brown University*, 224 p., photographs, $4. Proceedings of the Brown University Convocation held in Providence, R. I., October 1959. Scientists and other thoughtful men discuss the physical universe, the social environment and individual man.

MECHANISMS IN RADIOBIOLOGY, Vol. II: Multicellular Organisms—Maurice Errera and Arne Forssberg, Eds.—*Academic*, 395 p., illus., $13. Discussion of radiation effects on embryonic and adult organisms, chiefly in mammals. Special chapters on immunological processes in irradiated organisms, on the mechanisms of protective agents and on the recovery of irradiated mammals.

THE MINNESOTA COMMUNITY: Country and Town in Transition—Lowry Nelson—*Univ. of Minn. Press*, 175 p., $4.25. A study of social change among Minnesota's population, emphasizing the process of rural-urban integration, considers many aspects not ordinarily included in sociological studies.

MY LIFE AND TIMES AS A PHYSICIST—I. I. Rabi, foreword by Joseph B. Platt—*Claremont College*, 55 p., $2.75. Two lectures by the Nobelist, dealing with the part that an understanding of science must play in wise comprehension and control of human affairs.

101 SCIENCE EXPERIMENTS—Illa Podendorf—*Childrens Press*, 157 p., illus. by Robert Borja, $4.50. Large-format, colorful children's book of experiments with simple materials found in the home.

THE PALEOCENE PANTODONTA—Elwyn L. Simons—*Am. Philosophical Soc.*, Transactions, Vol. 50, Part 6, 99 p., illus., paper, $2.50. Presents taxonomic review of the Pantodonta with description of new genera and species, discusses their skeletal anatomy, ecology and relationship to other orders of mammals.

PARAPLEGIA: A Head, a Heart, and Two Big Wheels—Jules Saltman—*Public Affairs Committee*, Pamphlet No. 300, 28 p., illus., paper, 25¢ direct to publisher, 22 E. 38th Street, New York 16, N. Y.

RECENT PROGRESS IN HORMONE RESEARCH: Proceedings of the Laurentian Hormone Conference, 1959—Gregory Pincus, Ed.—*Academic*, 608 p., illus., $14. Six papers present data on the mechanisms of hormone action, others treat peptide hormones, thyroid hormones, and hormones and metabolism.

REPTILES: Life History, Evolution and Structure—Angus d'A. Bellairs—*Harper*, 192 p., paper, $1.35. Aims at providing a synthesis of the different sorts of knowledge available on reptiles, for the student, naturalist and general reader.

SEMINAR ON TRANSFORMATION GROUPS—Armand Borel and others—*Princeton Univ. Press*, 245 p., paper, $4.50. Transformation groups here are discussed mainly from the point of view of algebraic topology.

SIXTY MILLION YEARS OF HORSES—Lois and Louis Darling—*Morrow*, 64 p., illus. by authors, $2.50. Describes the physical characteristics of the horse, its evolution from tiny eohippus, and the history of the horse's relationship to man.

THE SKELETON KEY OF MATHEMATICS: A Simple Account of Complex Algebraic Theories—D. E. Littlewood—*Harper*, 138 p., paper, $1.25. Reprint of book first published in 1949, giving descriptive account of the theories for the general intelligent reader.

TECHNICAL DRAWING PROBLEMS, Series 3—

HEAR GERMAN POETRY!

Lotte Lenya, famed star of European and American stage, reads great poetry of Goethe, Rilke, Heine, Schiller, 30 others, from Minnesingers to present. "Invitation to German Poetry." 50-minute (12", 33⅓) hi-fi recording. 165-page illustrated book, full record text, English translation, $4.95. Money-back guarantee. Dept. SNL. DOVER, 180 Varick St., N. Y. 14, N. Y.

RAPID CALCULATIONS

by A. H. Russell

CAN YOU—

- Name the day of the week on which May 1st 1485, fell . . .
- Give the cube root of 42508549 . . .
- Tell how long it takes for money to double itself at 5% compounded annually . . .

IN 5 SECONDS?

- or, Multiply 56837 by 2467
- Divide 385623874169 by 89 . . .

In 20 Seconds?

YOU CAN—

perform these and many other feats *MENTALLY* after studying this book!

Now you can learn how easily and quickly work with figures can be speeded up through use of simple short cuts and elimination of needless number juggling. Save time, drudgery.

Covering a wide range, from simple arithmetic on up, the instructions given can be applied to an endless variety of activities. The book will be found especially valuable to executives and administrators, engineers and scientists generally, doctors, druggists, stock market traders, bookkeepers and accountants, and to workers in numerous other occupations involving number calculations. Not least, the average person will find he is enabled to check his everyday accounts more quickly, more accurately, and with infinitely less bother.

287 Pages • Self-teaching Exercise with Answers
$3.95 • 10-Day Money-Back Guarantee
EMERSON BOOKS, Inc., Dept. 47-M
251 West 19th Street, New York 11

PROSPECTOR'S & GEOLOGIST'S PICK "Rock Hammer" to you **$2.50 each**

Two indestructably solid pounds (33 oz.) 8" from face to chisel edge. 11" top to handle. Pleasantly comfortable polished hardwood handle (cemented into chromed steel head) carries back no fatiguing vibration. **Hi-Test Quality Product.** The very best for less. Pay postage and save dollars. Hammer: Only **$2.50**; Postage, add **85¢**.

HARRY ROSS Scientific & Lab Apparatus 61-L Reade St., N.Y. 7, N.Y.

Henry Cecil Spencer and Ivan Leroy Hill—*Macmillan*, 86 p., illus., paper, $4.50. Compact workbook, covering basic fundamentals, presenting problems that are thought-provoking rather than requiring much routine drafting.

THE TRUE BOOK OF ANIMAL HOMES—Illa Podendorf—*Childrens Press*, 48 p., illus. by John Hawkinson, $2. Shows youngest readers where different animals live.

UNDER THE DEEP OCEANS: Twentieth Century Voyages of Discovery—T. F. Gaskell—*Norton*, 240 p., illus., $3.95. Chief scientist of British oceanographic expedition gives nontechnical account of seismic prospecting, the Moho, deep sounding and deep drilling, seabed sediments and wandering continents.

THE WEATHER OF OREGON—Fred W. Decker—*Oregon State College*, 40 p., illus., paper, 50¢ direct to publisher, Corvallis, Ore. Outlines some of the interesting facts about the causes of Oregon's weather.

• Science News Letter, 78:108 August 13, 1960

MEDICINE

Germans to Get Multiple Shots of Vaccine

➤ BEGINNING this fall, West Germans will begin to receive multiple shots of polio, tetanus, diphtheria and whooping cough vaccine, Hans von Behring of Behringwerke AG, Marburg, West Germany, said at the Fifth International Poliomyelitis Conference.

The multiple shots are expected to give immunity in one to two shots, Mr. von Behring said. He said that only 25% of children between three and six years of age are vaccinated against polio, and only six to seven percent of the West German population was immunized during the last two years.

Mr. von Behring said the West Germans are not as eager to take the vaccine shots as persons in other countries. The West Germans have to pay for the shots whereas many other European populations receive the vaccine free.

Mr. von Behring's father, Emil von Behring, discovered the passive serum treatment of diphtheria for which he received a Nobel Prize in 1901.

• Science News Letter, 78:109 August 13, 1960

MEDICINE

Polio and Tetanus No Threat to Newborn Baby

➤ POLIO and tetanus are not diseases dangerous to a newborn infant as a rule, Dr. Pierre L. Lepine of the Pasteur Institute in Paris told the polio conference.

Dr. Lepine said that diphtheria and whooping cough are much more dangerous for the newborn. He said that protection of the infant could be achieved by giving one shot at birth for diphtheria and whooping cough; smallpox vaccination at the age of six months; after that tetanus and polio; and later the booster shots.

He said that the Pasteur Institute has experimented with multiple vaccine shots for some time, and that polio vaccine as well as vaccine for tetanus, diphtheria and whooping cough has been found to stay usable when mixed.

• Science News Letter, 78:109 August 13, 1960

PSYCHOLOGY

Test Predicts Success

➤ INK BLOTS, in the hands of a psychologist, can be used to predict whether a man will be a success or a failure as a business executive, Dr. Zygmunt A. Piotrowski of the Jefferson Medical College of Philadelphia indicated to the International Congress of Psychology in Bonn, Germany.

The blots can also help predict whether a man will be a criminal.

Dr. Piotrowski used the famous ink blot test developed by the Swiss psychiatrist Hermann Rorschach in his predictions. The extent to which a person is inclined to look at the pattern of a blot as a whole (his W score) rather than to pay any attention to small parts is significant for predicting whether he will be successful as a high-ranking executive.

The average W score of men who reach the vice presidential level and then fail is a little over 10, Dr. Piotrowski found in a study of 50 top ranking executives. This score of 10 is about the average W score to be expected from a group of adults with superior intelligence.

Highly successful executives—those who kept advancing in power and achievements—averaged nearly 18 in W score or nearly twice as high as the high executive who failed at the top level.

Perhaps the most important clue to potential behavior is what the psychiatrist calls a CR (color response). The individual makes a color response when he pays attention to the color that appears on some of the Rorschach cards.

He may, for example, point to a squiggle in one corner of the card and say, "That looks like a caterpillar." If pressed for his reason why, he may say, "Because it is green." That is a color response.

Color responses measure emotions and the desire to associate with or separate from others. If an individual produces no CR he is assumed to be emotionally flat or indifferent.

Color responses can be positive or negative, indicating attraction toward others or repulsion. If a person sees such wholesome objects as landscapes, flowers, fruit, warmth giving (controlled fire), he is giving positive color responses, an indication that he is drawn toward others.

If the color on the blots makes a person think of blood, anatomical slides, wounds, burning houses, an explosion, etc., he is giving negative CR that (unless he is a surgeon or medical student) predicts he will withdraw from others.

Dr. Piotrowski described another test which might be used to predict behavior, especially anti-social or aggressive delinquent behavior. The Hand Test consists of nine cards, each containing a picture of a human hand in a position different from those on the other cards. The person tested is asked to tell what each of the hands might be doing.

The tenth card is blank and the person tested is asked to imagine a hand for that card and then to talk about it.

The test is scored as follows, according to what is seen:

1. Aggressiveness—if the hand is seen as hitting.
2. Directing—if the hand is seen as giving signals as a traffic policeman.
3. Fear—warding off aggression, self-protection.
4. Affection—if the hand is seen as reaching out in a friendly way.
5. Communication—getting ideas across to others, emphasizing a point.
6. Activity—hands performing skillful mechanical work.
7. Submissiveness—calling for help.
8. Passivity—no action, "waiting for finger nails to dry."
9. Exhibitionism—attracting attention to oneself.
10. Crippled hands—hands deformed or diseased.

Scores on this test were found to distinguish between prison inmates and normal individuals, between prison inmates and indigents, and between normal individuals and withdrawn mental patients.

• Science News Letter, 78:109 August 13, 1960

INVENTORS NEEDED AT ONCE

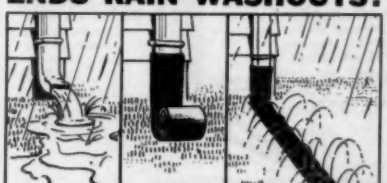
If you have an invention you wish to sell outright or license on royalty, write us at once. We are seeking inventions of household items, games, toys, sports items, tools, and mechanical and technical devices. Patented or unpatented. For further information and free brochure outlining manufacturers' requirements, royalty rates, send name (no drawings, please) on letter or postcard at once.

KESSLER CORPORATION, Dept. D-418, Fremont, Ohio

Looking for a PUBLISHER?

Your book can be published, promoted, distributed by successful, reliable company noted for prompt, personal service. All subjects. Free Editorial Report. Inquiries also invited from businesses, churches, etc. Send for Free Booklet.
Vantage Press, Dept. T-8, 120 W. 31, New York 1

ENDS RAIN WASHOUTS!



Thousands sold at $1.98. Now Only 88¢

Now for only 88¢, an Automatic Rain Sprinkler that eliminates washouts, gullies and mud holes—prevents soil erosion and damage to lawn! This sturdy wear-resistant plastic tube is 8 ft. long. Attaches easily, in a moment, to any round or rectangular spout. Remains in neat, unobtrusive rolled-up position until it rains. Then, when water rushes through drain pipe, Rain Sprinkler automatically unrolls—conducts water away from house—gently sprinkles it where it can do no harm! Save the trouble and expense of installing dry wells! Only 88¢ each, ppd.; 3 for $2.50 ppd. Send check or m.o. Satisfaction Guaranteed or Money Back. Spencer Gifts, C8-33 Spencer Bldg., Atlantic City, N. J.

BLOOD PRESSURE MEASURE

FOR DOCTORS — FOR NURSES

For Patients Who Require Frequent Measurement of Their Blood Pressure

A special quantity purchase enables us to offer this famous Blood Pressure instrument to those who have occasion to measure their blood pressure frequently, a quality instrument, at about half the regular price.

Order No. 718 **$21.85** Postpaid

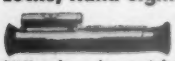
MERCURIAL SPHYGMOMANOMETER
260 or 300 MM

Bowles Stethescope	3.85 Postpaid
Ford Stethescope	2.95 Postpaid
Ford Bowles Stethescope	4.95 Postpaid

Fully Guaranteed — Complete Service Always Available

John Surrey, Ltd.
11 West 32nd St., Dept. SN-82, New York 1, N. Y.

SURVEYING Bubble Level **$3.50 p. p.**
Locke, Hand Sighting; 1:1X



This level never before sold under $15.00. Brass, 6" long, ¾" diameter, finished in beautiful satin-black. Sliding draw (or eye-tube) sharply focuses bubble and cross-wire. Relieves fatigue because object is clearly seen at same time. A very superior instrument. A necessity to contractors, gardeners, plumbers, masons, home owners, carpenters, architects, students, farmers, engineers, scientists, etc. Essential for laying out: drainage ditches, foundations, contour plowing, grading, fences, water levels, golf courses, tennis courts, gardens, etc. Accuracy on the order of 1/5 of 1°. ABSOLUTELY FREE: With each Locke Bubble Level; Beautiful split saddle-leather pouch with belt loop. BOTH ONLY $3.50 P.P. Limited stock.

HARRY ROSS Scientific & Lab. Apparatus 61-L Reade St., N.Y. 7, N. Y.

USED AND APPROVED BY LEADING UNIVERSITIES!

Model RV-6
6-INCH DYNASCOPE
Reflecting Telescope

includes these features:
- Electric Drive
- Rotating Tube
- Setting Circles

Only **$194.95**

F.O.B. Hartford
Shipping Wt. 50 lbs. Express charges collect

Completely Portable! Entire telescope dismantles in minutes for easy carrying.

Easy Terms Available!

Finest American-made 6-inch reflector in its price range! Saves $100 or more, yet get all these fine features. f/8 6-inch mirror accurate to ¼ wave • 3 matched eyepieces (75X, 150X, 343X) • 6x30 Achromatic finderscope • Heavy-duty mount with setting circles • Rack & Pinion eyepiece holder • Sturdy lightweight tripod.

CRITERION MANUFACTURING COMPANY
Dept. NL-65, 331 Church St., Hartford 1, Conn.

FREE FACTS! MAIL COUPON!

Criterion Manufacturing Company
Dept. NL-65, 331 Church St., Hartford 1, Conn.
☐ Under your unconditional guarantee, please ship me promptly the RV-6 DYNASCOPE. My payment of $194.95 is enclosed.
☐ Please send FREE LITERATURE on the RV-6 Dynascope and your other DYNASCOPES priced as low as $49.95.

Name.....
Address.....
City.....State.....

ASTRONOMY
For Everyone

Enjoy **SKY AND TELESCOPE** magazine monthly. Profusely illustrated. Observing and telescope making departments, monthly star and planet charts. Subscription in U. S.: $5.00, 1 year; $9.00, 2 years. Sample copy, 50¢.

SKY AND TELESCOPE Dept. SNL-21 Cambridge 38, Mass.

New "Mechanical Educator" to IMPROVE MEMORY

Learn faster than ever with new device effective for learning languages, speech, tables, facts, formulae, etc.

DORMIPHONE MEMORY TRAINER

- Speeds up learning processes
- Aids concentration
- Provides entertainment

The Memory Trainer records, instantly plays back, and when clock is set, automatically repeats speech, music, any material at regular intervals through a built-in speaker. No reels of tape to snarl or rewind. Portable. Ideal aid for work, school, child training, entertainment —Used by educators, psychologists, people of all ages.

Self-Contained Recording Cartridges from 30 seconds to 55 minutes Easily removed. Can be stored or "erased" instantly and reused repeatedly.

Write TODAY for FREE folder with complete information. No salesman will call.

Modernophone, Inc., 125-080 Radio City, N.Y.20,N.Y.

MICRO-ADS

Equipment, supplies and services of special interest to scientists, science teachers and students, science-minded laymen and hobbyists. 25¢ per word, payable in advance. Closing date 3 weeks prior to publication (Saturday).

SNL, 1719 N St., N.W., Washington 6, D. C.

GOVERNMENT SURPLUS RADIOS, RECEIVERS, transmitters, gadgets, parabolic reflectors, infra-red snooperscopes, aircraft, camera lenses. Amazing catalog 10¢. John Meshna, Malden 48, Mass.

NATIONAL GEOGRAPHIC MAGAZINES 1888-1960, any issue, Periodical Service, Box 465-SN., Wilmington, Delaware.

PROFITABLE INVENTIONS — NEW GUIDE book. Send for your copy, "What Every Inventor Should Know," practical, and may help sell your invention. Price $1.00 postpaid. Copyrighted. Patents Research, Inc., 6 Gaywood Circle, Birmingham 13, Alabama.

THE STRUCTURE OF THE ATOM—23 PAGES with many diagrams. A completely new system of atomic structure comprising structural center, but no nucleus. Price 25 cents ppd. C. F. Krafft, 218 Columbia Road, Annandale, Virginia.

AERONAUTICS

Recorders Now a Must For Turbine Planes

➤ ALL TURBINE-POWERED air carrier aircraft, including turbo-props, must be equipped with flight recorders, according to a recent Federal Aviation Agency ruling. The recorder is a machine connected to the aircraft's instruments that automatically records the plane's air speed, altitude, vertical acceleration, heading and time. It will assist in determining the cause of in flight incidents and accidents.

The previous regulation required that the recorders be installed on air carrier airplanes that are certificated for flight operations above 25,000 feet. This did not cover turbo-prop planes, which operate at much lower altitudes.

• Science News Letter, 78:110 August 13, 1960

Do You Know

The *electrical industry* uses 40% of all copper consumed in the United States.

World *food storage losses* caused by rats, insects and fungi annually amount to as much as 33,000,000 tons.

About three-fourths of the world supply of *pencil wood* comes from southern Oregon and northern California.

Some 25% to 30% of American adults cannot or do not *read* adult-level materials, a recent study shows.

The 1959 Alaska *salmon catch* was the lowest in nearly 60 years and the total United States canned salmon pack the lowest since 1898.

The presence of *oxygen* in living systems increases the sensitivity of the cells to radiation.

Plywood *pipelines* are being used successfully by Russian engineers to help cut down corrosion in the oil fields.

All *drugs* are toxic when used in excess amounts.

Questions

AERONAUTICS—When is the United States expected to fire an astronaut into orbit? p. 98.

GENERAL SCIENCE—What percentage of the Supreme Council of the Soviets are "working scientists"? p. 106.

LINGUISTICS—How many international congresses in the field of medicine have used Interlingua? p. 102.

Photographs: Cover, Convair Division of General Dynamics Corp.; p. 99, Hadassah; p. 102, Baldwin-Lima-Hamilton Corp.; p. 103, Lear, Inc.; p. 112, Eastman Chemical Products, Inc.

MEDICINE

Bacteria Raise Deaths

▶ THE MOST IMPORTANT CAUSES of severe infection and death in hospitals today are antibiotic-resistant bacteria. These now top the previously more fatal pneumonia bacteria and strep-infection type bacteria that proved susceptible to antibiotics.

In Boston City Hospital in 1935, antibiotic resistant *Staphylococcus aureus*, which causes boils, carbuncles and other inflammations, accounted for one of every five cases of infection and less than one of every five cases of death from bacteria-caused infections.

In 1957, it accounted for two-fifths of both infections and deaths, Dr. Maxwell Finland, associate professor of medicine at the Harvard Medical School and physician-in-chief of the Fourth Medical Service of Boston City Hospital, reports in the New England Journal of Medicine, 263:207, 1960.

Dr. Finland says that reliance on antibiotics may be responsible for increasing laxity in application of strict aseptic methods for avoiding infection and cross-infections in surgery, nurseries and general wards in which infections are being treated. This laxity, he says, "is undoubtedly a major contributing factor," to the rise in staph incidence and fatality.

No remedies for stemming the continuing rise of staph deaths have yet been demonstrated "to produce any lasting salutary effect," says Dr. Finland.

• Science News Letter, 78:111 August 13, 1960

INVENTIONS

Jet Deflector Patented

▶ A MEANS OF DEFLECTING the thrust of a jet engine downward and the first commercial process for making diamonds have been patented.

John Avery Flint of Farnborough, England, was awarded patent No. 2,947,501 for "a deflecting device located in the jet nozzle unit of a jet propelled aircraft for diverting the jet from a rearwardly directed nozzle into a downwardly directed nozzle." He assigned his invention to Power Jets Ltd. of London.

The patent calls for a normal horizontal jet duct with a second duct of the same diameter branching down from it at an angle of about 60 degrees. Two "butterfly valves"—circular plates hinged across a diameter or elliptical plates hinged at both ends of either the major or the minor axis—operate together so that when one nozzle is open the other is closed. Both valve plates are curved so that when positioned to provide a downward thrust they provide a smooth curve rather than an abrupt change in direction.

The purpose of the device is to increase the vertical thrust at the expense of the forward thrust. Planes using this device may require less runway in take-off. The device may make it possible for larger aircraft to be used on aircraft carriers and for planes to pull out of dives more abruptly.

Four patents, all assigned to General Electric, covered the preparation of diamonds from other forms of carbon. General Electric was first successful in developing a process for the commercial production of diamonds more than five years ago, but details were secret until late last year.

Patent No. 2,947,610, awarded to Howard Tracy Hall of Provo, Utah, and Herbert M. Strong and Robert H. Wentorf Jr., both of Schenactady, N. Y., and assigned to General Electric, was one of the four mentioned and describes how carbon may be converted to diamond by the action of heat and pressure in the presence of certain metallic catalysts.

Pressures of more than 75,000 atmospheres and temperatures of between 1,200 and 2,000 degrees centigrade may be used, the best results being obtained at about 95,000 atmospheres and between 1,400 and 1,800 degrees centigrade. The eleven metals listed as catalysts for the process include iron, nickel, cobalt, chromium and manganese.

The apparatus used to achieve these conditions consists basically of a doughnut-shaped ring and two conical pistons. The reaction mixture is placed in the center of the ring and the two pistons, one above and one below the ring, are compressed. The unit is heated electrically.

U. S. industry uses more than two tons of diamonds every year for cutting, grinding and polishing, and was completely dependent on external sources of natural diamonds before General Electric started marketing synthetic diamonds in 1957. These man-made diamonds are not of gem quality.

A patent was also issued for a means of making flavored cigars or cigarettes. They can produce two different flavors.

• Science News Letter, 78:111 August 13, 1960

CHEMISTRY

Chemical Process Can Shrink Wool Fibers

▶ A CHEMICAL TREATMENT that shinks wool fibers may be the basis for improved manufacture of wool felts, according to the U. S. Department of Agriculture. Dimethyl sulfoxide, an inexpensive, commercially available liquid, shortens fibers by rearrangement of wool molecules and thus effects a permanent hardening and toughening of the felt. Relative hardness of the felt can be controlled both by the length of time the felt is left in the solution and the temperature of the bath. Aim of the improved process is to lower the cost of felt manufacture by reducing the amount of mechanical beating now required to harden felts.

• Science News Letter, 78:111 August 13, 1960

OPTICAL BARGAINS

Order by Stock No.—Send Check or M.O.—Satisfaction or Money Back!

OFFSPRING OF SCIENCE . . . REALLY BEAUTIFUL!
CIRCULAR DIFFRACTION—GRATING JEWELRY

Shimmering rainbows of gemlike color in jewelry of exquisite beauty—made with CIRCULAR DIFFRACTION—GRATING REPLICA. Just as a prism breaks up light into its full range of individual colors, so does the diffraction grating. Promises to become a rage in current fashion.

Stock #30,349-Q Earrings .....$2.75 Pstpd.
Stock #30,350-Q Cuff Links .....$2.75 Pstpd.
Stock #30,372-Q Pendant .....$2.75 Pstpd.
Stock #30,373-Q 2 Pins .....$2.75 Pstpd.
Stock #30,390-Q Tie-Clasp .....$2.75 Pstpd.

GIANT OPTICAL BARGAIN KIT

Useful popular items all in one package. You get: PRISM; DIFFRACTION GRATING; POLARIZING FILTERS; 5 LENSES DOUBLE-CONVEX, 14 x 48mm; "FUN WITH OPTICS," 32-page instruction book; "BEGINNER'S LENS KIT," 10 lenses to make many optical items; "STAR & SATELLITE PATHFINDER" Instruction Book; RECTANGULAR MAGNIFIER. A big $10 value.
Stock No. 50,204-Q.....$3.00 Pstpd.

AGES-OLD FOSSIL COLLECTIONS

Millions of years old! 3 full sets—30 fantastic plant and animal fossils—all for $3.75. EARTH SCIENTIST SET: Dinosaur bone, crinoid stem, horn coral, worm tubes, petrified wood, bryozoa stem, lamp shell, scallop, sea urchin, oyster, clam, snail fossil. CARBONIFEROUS SET: Brachipod, worm burl, crinoid stem, fusuline, horn coral, bryozoan, snail and clam. CRETACEOUS SET: Brachipod, oyster, sea urchin, petrified wood, etc. All three sets for one low price!
Stock No. 50,344-Q.....$3.75 Postpaid

Here's a Terrific Buy!
WAR SURPLUS! American-Made!
7 x 50 BINOCULARS

Big savings! Brand new! Crystal clear viewing—7 power. Every optical element is coated. An excellent night glass—the size recommended for satellite viewing. Individual eye focus. Exit pupil 7 mm. Approx. field at 1,000 yds. is 376 ft. Carrying case included. American 7 x 50's normally cost $195. Our war surplus price saves you real money.
Stock No. 1533-Q....only $55.00 pstpd. (tax incl.)

Bargain-Priced STETHOSCOPE
FOR HOBBYISTS, SCHOOLS

Listen to running machinery. Check on hard-to-hear motor noises, leakage of gas, air, or fluid. Pick up heart beats of animals, insect noises, other "unhearable" sounds. Splendid for experiments, classroom use.
Stock No. 50,223-Q .....$2.95 Pstpd.
Stock No. 50,270-Q—Deluxe Model ..$5.95 Pstpd.

NEW! BRAINIAC COMPUTER SET

A fascinating and interesting introduction to the important new field of the computer. Makes such devices as: interplanetary time and space calculator, reasoning machine, logic games, intelligence tester, many other experimental units. All connections are with nuts and bolts—no soldering necessary.

Designs can be changed in minutes. Complete with 23-page Booklet—plus 9 electrical research experiments. Overall size: 15" x 20".
Stock No. 70,305-Q.....$11.95 postpaid

Take Telephoto Shots Thru
7 x 50 MONOCULAR

This is fine quality, American made instrument—war surplus! Actually ⅛ of U.S. Govt. 7 x 50 Binocular. Used for general observation both day and night and to take fascinating telephoto shots with your camera. Brand new, $95 value. Due to Japanese competition we close these out at bargain price. Directions and mounting hints included.
Stock No. 50,003-Q.....$15.00 Pstpd.

FREE CATALOG-Q
128 Pages! Over 1000 Bargains!

America's No. 1 source of supply for science experimenters, hobbyists. Complete line of Astronomical Telescope parts and assembled Telescopes. Also huge selection of lenses, prisms, war surplus optical instruments, parts and accessories. Telescopes, microscopes, satellite scopes, binoculars, infrared snipperscopes, items for making "Science Fair" projects, math learning and teaching aids. Request Catalog Q.

EASY PAYMENT PLAN AVAILABLE! DETAILS WITH CATALOG!

EDMUND SCIENTIFIC CO.
BARRINGTON, NEW JERSEY

New Machines and Gadgets

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington D. C., and ask for Gadget Bulletin 1052. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

BOAT FOOT THROTTLE enables boating enthusiasts to literally "step on the gas." The aluminum device lets the boat operator take advantage of automatic reflexes learned from driving a car. To accelerate, the operator presses down the toe; to decelerate, he presses the heel.

• Science News Letter, 78:112, August 13, 1960

TELESCOPE-KALEIDOSCOPE shows an actual scene divided into eighths, rather than little beads or cutouts reflecting in patterns. When aimed at an automobile, a person or any object, this nine-inch-long tube shows many different views of the scene.

• Science News Letter, 78:112, August 13, 1960

LIGHTER AND WATCH are combined in one unit, available in two sizes. Set in the case of the lighter is a shock-resistant, Swiss-made jeweled movement timepiece. The larger unit has a windproof outdoor lighter.

• Science News Letter, 78:112, August 13, 1960

ONE-PIECE RAINCAPE, shown in the photograph, is a convenient garment for wet-weather wear. Easier to slip on than a raincoat, the polyethylene plastic raincape is full enough to be worn over suits or bulky outerwear as well as dresses, while the hood will protect a hat or hairdo.

The cape may be wiped clean or it can be dipped into a mild soap or detergent bath.

• Science News Letter, 78:112, August 13, 1960

FABRIC MENDER, non-toxic and non-flammable, can be used for repairs on wool, cotton, leather and other fabrics. It will withstand washing and ironing. Among recommended uses are repairs on clothing, canvas awnings, leather luggage, mattress covers and upholstery.

• Science News Letter, 78:112, August 13, 1960

WATER PURIFIER is a portable filtering device that produces safe, clean water from any source. Harmful bacteria, Bacillus coli, dirt and odors are removed. The pocket-size, 15-ounce unit comes in a compact, watertight kit. The filter unit consists of a filter pad between two fiber screens.

• Science News Letter, 78:112, August 13, 1960

TELESCOPING RACK opens to form a bar for drying clothes in tub or shower and folds up when not in use. Telescoping from 16 to 34 inches, the aluminum rack holds up to 10 garments. No tools are needed to attach the rack to any shower head.

• Science News Letter, 78:112, August 13, 1960

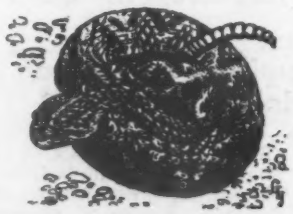
VERTICAL SHISHKABOB GRILL allows self-basting, and prevents grease flare-up while preparing barbecue. Equipped with eight skewers that rotate automatically, the center charcoal loading permits easy replenishing, while keeping the temperature evenly distributed. The grill stands 23 inches high and weighs eight pounds, it easily taken apart and cleaned.

• Science News Letter, 78:112, August 13, 1960

Nature Ramblings

By HORACE LOFTIN

Cold-Blooded Summer



➤ AS THE SUMMER SUN beats down and you swelter in your coat and collar, do you envy the animals that are cold-blooded? You may change your mind when you consider the plight of cold-blooded creatures in hot weather.

A cold-blooded animal is not one that can keep a low body temperature. Rather, it is an animal that takes on the temperature of its surroundings, hot or cold.

When the air temperature soars into the hundreds, the poor animal's temperature mounts about as high. When the air becomes frigid, so does its body.

Its only defense against death by heat in summer is to seek the shade. In winter, it must find some warmth.

On the other hand, warm-blooded animals are those that have the ability to regulate their body temperature, summer or winter. You shiver when you are cold, and the heat generated in this muscular movement warms the body. You perspire when you are warm, and the evaporation of the sweat carries heat from your body. By an intricate balance of your body mechanism, your temperature stays fairly constant.

Only the birds and mammals have this kind of control over their body temperature. All other creatures are cold-blooded and are at the mercy of the environment.

Where summer heat is not too great and where shade can be found, summer works little hardship on the cold-blooded animals. But where heat is intense and shade at a premium, they cannot safely move in the open when the sun is high.

For example, snakes inhabiting desert areas must remain buried under the sand or hidden deep among rock crevices during the day. They emerge only in the cool of the evening.

Cold-blooded animals of the desert may be put at another disadvantage in summer: They may get too cold! It is common for temperatures to range from unbearably hot at noon to almost freezing at night in desert conditions. Thus, the snake that cannot move during the day because of the heat may also have to hole up late at night as the temperature drops.

Many cold-blooded creatures go into "hiberation" during the height of summer, sleeping till cooler weather comes.

Because they can defy the heat of summer and the cold of winter, the warm-blooded creatures—birds and mammals—have gained an important edge over their cold-blooded relatives. But wouldn't it be great to sleep away the summer heat!

• Science News Letter, 78:112, August 13, 1960

$5.50